

Claims

1. A portable, field oriented test set for testing TDM and packet based communication networks, comprising:

5 a mother module, for managing the test set;

a TDM module, operatively connected to the mother module and to a plurality of physical connectors, said TDM module being adapted to perform test sequences on digital circuit networks;

10 a packet communication test module, operatively connected to the mother module, to the TDM module and to at least one 10/100/1000BaseTX connector, said packet communication test module being adapted to perform test sequences on packet based communications networks;

a display area for displaying information relative to the tests under way and to provide information with respect to the test set;

15 input devices, for inputting information into said test set; and

a GUI for interfacing between said test set and a user,

whereby said test set is adapted to test TDM communication networks and packet based communication networks.

- 20 2. A graphical user interface for a test set being adapted to perform testing on a plurality of communications channels, said GUI comprising:

a display comprising a signal area, a circuit area and a test area;

said signal area displaying icons related to the physical communications channels;

25 said circuit area displaying icons related to standard multiplexing steps associated with said signal area icons; and

said test area displaying icons related to the test to be executed,

30 wherein when said test set is physically connected to a physical communication channel, an icon in the signal area representing said physical communication channel is highlighted, and icons in the circuit area and the test area related to the icon representing the physical

communication channel, and representing valid circuits or tests associated with the physical communication channel are highlighted, so that a user can only select a valid circuit or test icon.

- 5 3. A GUI according to claim 2, wherein when said test set is physically connected to said physical communication channel, said user selects said associated icon in the signal area manually.
- 10 4. A GUI according to claim 2, wherein when said test set is physically connected to said physical communication channel, said test set determines which communication channel is connected and automatically highlights the associated icon in the signal area.
- 15 5. A GUI according to claim 2, wherein said display further includes a touch screen, so that said user selects the appropriate icons by touching the related area on the touch screen.
- 20 6. A GUI according to claim 2, wherein said signal area includes icons for DS1, DS3, EC-1, OC-N/Nc, and 10/100/1000BaseTX physical communications channels.
7. A GUI according to claim 2, wherein said circuit area includes icons for STS-1, STS-N/Nc, M13 and VT1.5 multiplexing steps .
- 25 8. A GUI according to claim 2, wherein said test area includes icons for DS1, DS3, STS-1, STS-Nc and Packet.
- 30 9. A loopback accessory for testing a full duplex Ethernet WAN link with a test set, said accessory including: an interface for receiving Ethernet packets from a communications network, an Ethernet MAC Controller for delineating destination and source MAC addresses of a packet; an

inverter for inverting the destination and source MAC addresses and for creating another packet with the inverted destination and source addresses; said accessory transmitting the other packet over said communications network.

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10.A loopback accessory according to claim 9, wherein said accessory further includes power means, for powering said accessory.

11.A method for testing full duplex Ethernet WAN links, comprising:

- 10 preparing a packet including destination and source MAC addresses with a test set, and time-stamping said packet with said test set;
sending said packet over a communications network to a loopback accessory;
receiving said packet with said loopback accessory;
15 inverting said source and destination MAC addresses with said loopback accessory and accordingly preparing another packet;
sending said other packet from said loopback accessory to said test set over said communications network;
receiving said other packet with said test set; and
20 analysing said packet with said test set to extract relevant information.

12.A test set according to claim 1, wherein said test set is adapted to test packet communications embedded inside a POS link, with said TDM communication module and said packet communication module.

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13.A test set according to claim 1, wherein said test set is adapted to drop a packet communication from a POS link to an Ethernet interface.

14.A system for testing full duplex 10/100/1000BaseTX communications links comprising:

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a test set for preparing and sending over the communications link a packet including destination and source MAC addresses, and for time-stamping said packet; and

a loopback accessory for receiving the packet, inverting the destination and source MAC addresses, preparing another packet with the destination and source MAC addresses so inverted and transmitting the other packet over the communications link to the test set.

15. A method for testing an Ethernet link comprising:

- (a) generating a PRBS test pattern and filling the data portion of a flow of Ethernet packets with the PRBS test pattern using a first test set;
- (b) transmitting said packets from said first test set to a second test set over an Ethernet TLS link;
- (c) extracting and obtaining a resulting PRBS test pattern from the packets received at a second test set, the resulting pattern allowing for a precise count of bit errors, thereby providing a bit error rate.

16. A method according to claim 15, wherein said test is carried in one direction at a time when the communication link to be tested is half duplex.

17. A method according to claim 15, wherein said first and second test sets are adapted to perform the steps of the method simultaneously, in order to test under full duplex conditions.

18. A method according to claim 15, wherein said second test set is replaced by a loopback accessory, said loopback accessory inverting the source and destination addresses of the packets and transmitting the modified packets back to the first test set.